Chemistry
Ticket Out the Door
Set 28: Reaction Rates

Name _____ Period _____

Skill 28.02 & Skill 28.03 Problem 1

Draw and label energy diagrams depicting the following reactions.	
(a) $\triangle E_{forward}$ = -30 kJ ; E_a (forward) = +50 kJ	(b) $\triangle E_{reverse}$ = +40 kJ ; E_a (forward) = +30 kJ
Which reaction proceeds more quickly in the forward direction? How do you know?	

Skill 28.04 Problem 1

For the exothermic rxn represented below, carried out at 298 K, predict the effect of each of the following changes on the initial rate of the reaction and explain your prediction.

$H_2(g) + I_2(g) \rightarrow 2HI(g)$

(a) Addition of hydrogen gas at constant temperature and constant volume.
(b) Increase in volume of the reaction vessel at constant temperature.
(c) Increase in temperature.

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Skill 28.05 Problem 1

The decomposition of compound X is an elementary process that proceeds as follows:

$X(g) \rightleftharpoons A(g) + B(g)$ $\quad \triangle H = +15$ kilocalories

The forward reaction is slow at room temperature but becomes rapid when a catalyst is added.

(a) Draw the diagram of potential energy vs. reaction coordinate for the uncatalyzed reaction. On this diagram label:

(1) the axis
(2) the energies of the reactants and the products
(3) the energy of the activated complex
(4) all significant energy differences

(b) On the diagram indicate the change or changes that result from the addition of the catalyst. Explain the role of the catalyst in changing the rate of the reaction.

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